

# Service Manual

Cassette Deck

Dolby B • C NR-Equipped  
Stereo Cassette Deck

## RS-B14



Color

(K)...Black Type  
(S)...Silver Type



Color	Area
(S)	[P].....U.S.A.
(S)	[C].....Canada.

### RS-636 MECHANISM SERIES

### Specifications

**Deck system:** Stereo cassette deck  
**Track system:** 4-track, 2-channel  
**Heads:**  
     **REC/PLAY;** MX head  
     **Erasing;** Double-gap ferrite head  
**Motor:** 1 motor system  
**Recording system:** AC bias  
     **Bias frequency:** 80 kHz  
**Erasing system:** AC bias  
**Tape speed:** 4.8 cm/sec.  
**Frequency response:**  
     **Metal;** 20 Hz~17 kHz  
             40 Hz~16 kHz±3 dB  
     **CrO<sub>2</sub>;** 20 Hz~17 kHz  
             40 Hz~15 kHz±3 dB  
     **Normal;** 20 Hz~16 kHz  
             40 Hz~14 kHz ±3 dB

**S/N:**

(Signal level=max recording level, CrO<sub>2</sub> type tape)

**Dolby C NR in;** 75 dB (CCIR)  
**Dolby B NR in;** 67 dB (CCIR)  
**NR out;** 57 dB (A weighted)

**Wow and flutter:** 0.07% (WRMS)  
**Fast Forward and Rewind Time:** Approx. 110 seconds with C-60 cassette tape  
**Input sensitivity and impedance:**  
     **MIC;** 0.25 mV/400Ω~10 kΩ  
     **LINE;** 70 mV/47 kΩ  
**Output voltage and impedance:**  
     **LINE;** 400 mV/1.8 kΩ  
     **HEADPHONES;** 80 mV/8 Ω  
**Power consumption:** 11 W  
**Power supply:** AC 50 Hz/60 Hz, 120 V  
**Dimensions (W×H×D):** 430×108×220 mm  
     (16<sup>29</sup>/<sub>32</sub>"×4<sup>9</sup>/<sub>32</sub>"×9<sup>21</sup>/<sub>32</sub>"")  
**Weight:** 3.1 kg (6 lbs. 13 oz.)

Design and specifications are subject to change without notice.

\*'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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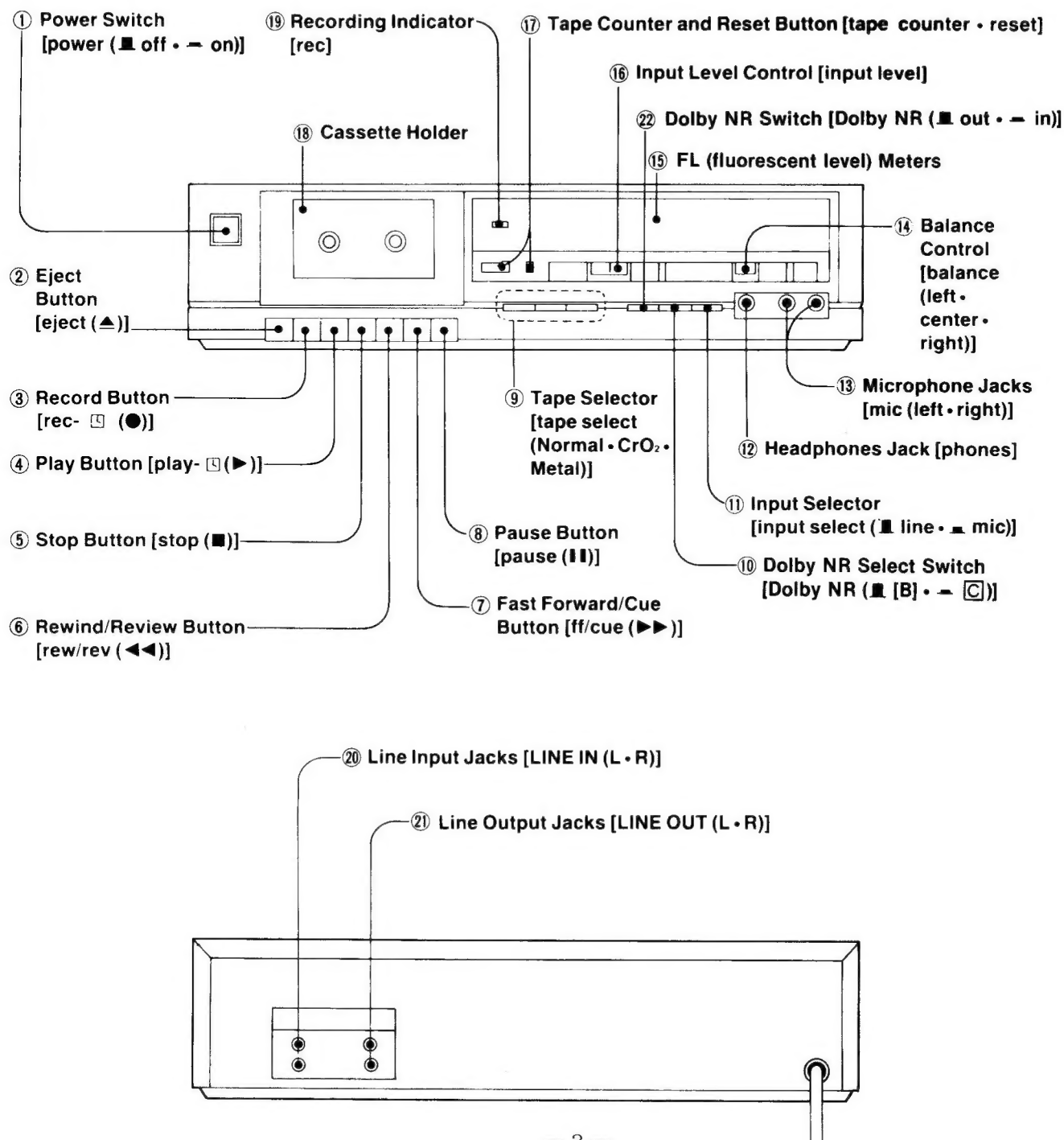
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## ■ CONTENTS

ITEM	PAGE	ITEM	PAGE
• Location of Controls and Components .....	2	• Electrical Parts List .....	15
• Safety Precautions .....	3	• Circuit Boards and Wiring Connection Diagram .....	16
• Insulation Resistance Test .....	3	• Mechanical Parts Location (included Parts List) .....	19
• Disassembly Instructions .....	3	• Cabinet Parts Location (included Cabinet, Accessories and Packing Parts List) .....	21
• Measurement and Adjustment Methods .....	5		
• Block Diagram.....	10		
• Schematic Diagram .....	12		

## ■ LOCATION OF CONTROLS AND COMPONENTS



## ■ SAFETY PRECAUTIONS (For U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

## ■ INSULATION RESISTANCE TEST (For U.S.A.)

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3\text{M}\Omega$  and  $5.2\text{M}\Omega$  to all exposed parts\*. (Fig. 1) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. 2)

\*Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.

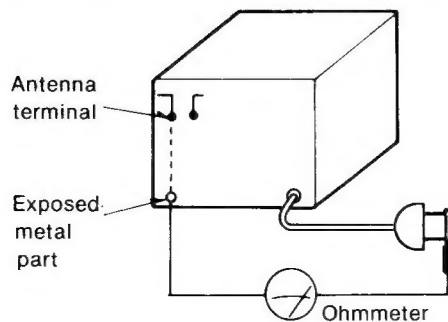


Fig. 1

Resistance =  $3\text{M}\Omega$ — $5.2\text{M}\Omega$

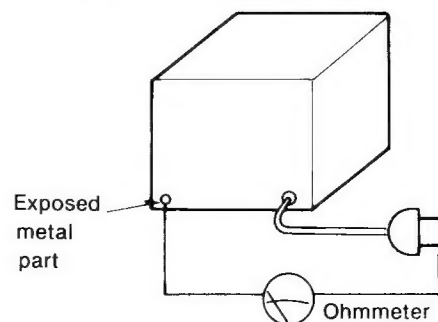


Fig. 2

Resistance = Approx  $\infty$

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

## ■ DISASSEMBLY INSTRUCTIONS

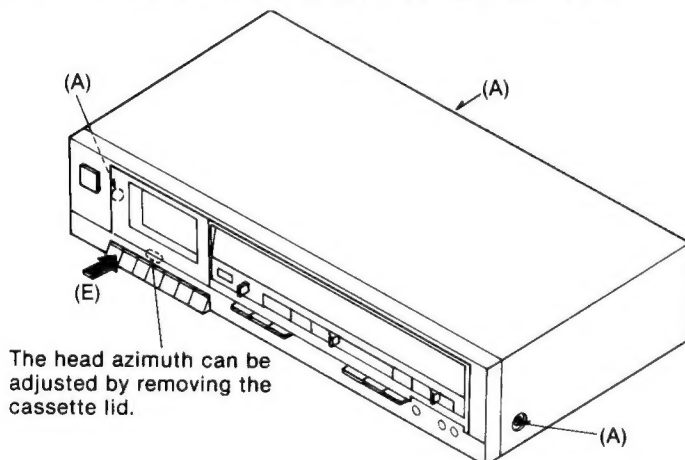


Fig. 1

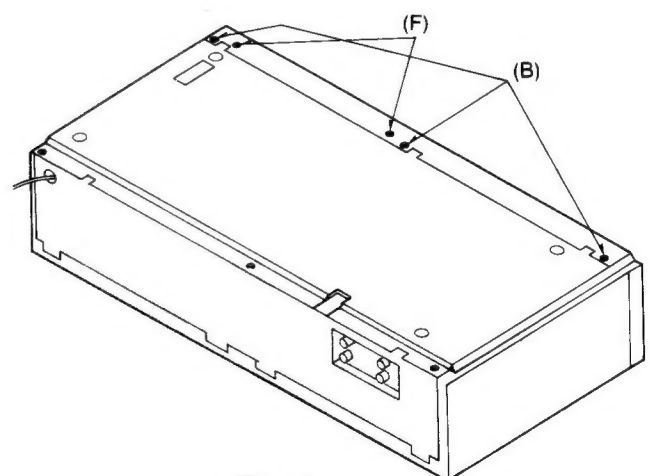


Fig. 2

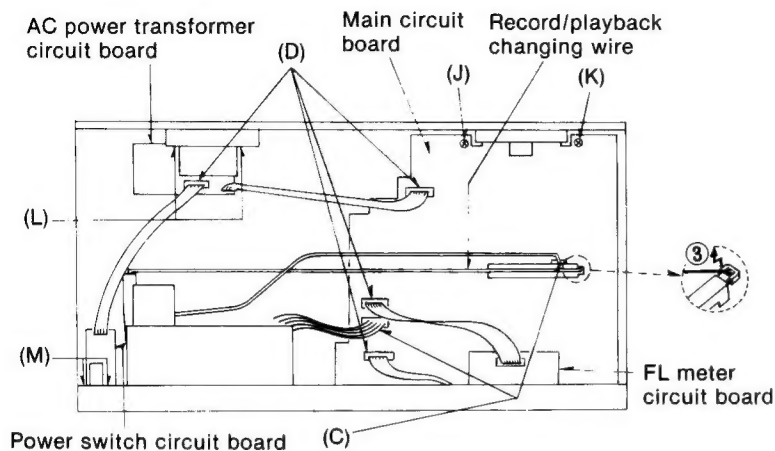


Fig. 3

#### (D) How to remove flat cable

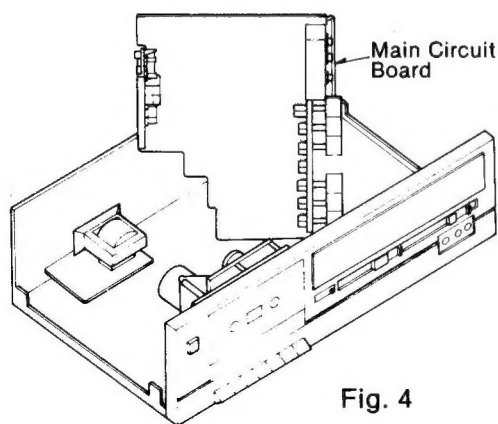
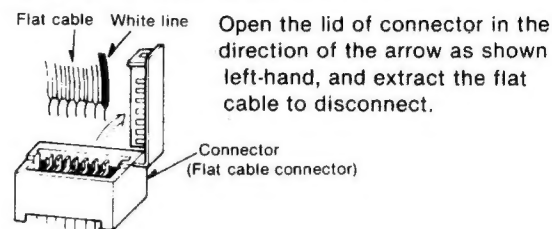


Fig. 4

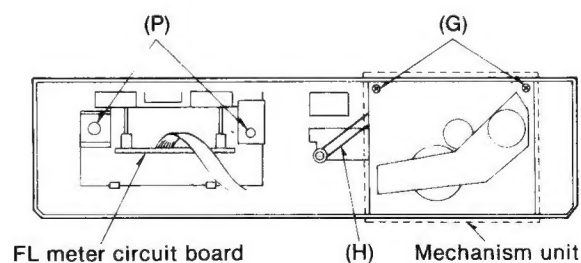


Fig. 5

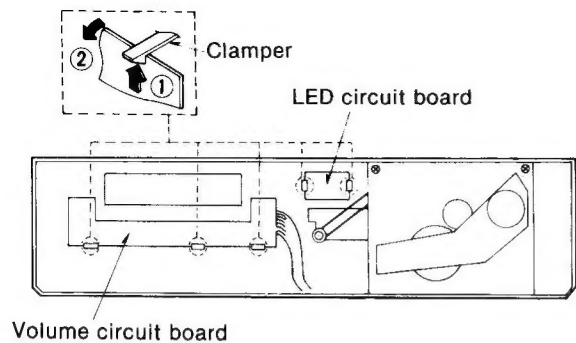


Fig. 6

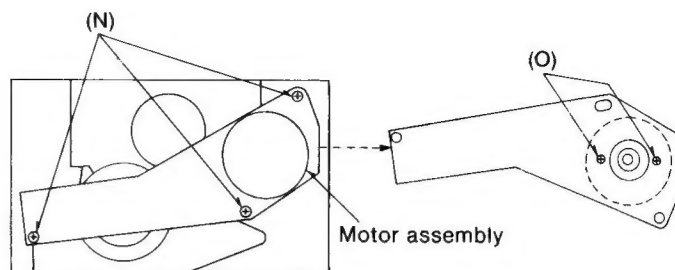


Fig. 7

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	• 3 screws .....(A)	1
2	1 → 2	LED circuit board	• As shown in fig. 6, raise the claspers in the direction of arrow ① and remove the LED circuit board in the direction of arrow ② .	6
3	1 → 2 → 3	Front panel assembly and mechanism unit	• 3 screws .....(B) • Pull out the connectors A B .....(C) • How to remove flat cable C D F .....(D)	2 3 3

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
4	1 → 4	Mechanism unit	<ul style="list-style-type: none"> <li>• Push the eject button .....(E)</li> <li>• 2 screws .....(F)</li> <li>• 2 screws .....(G)</li> <li>• Remove the counter belt.....(H)</li> <li>• Pull out the connectors <b>A</b> <b>B</b> .....(C)</li> <li>• As shown in fig. 3, remove the record/ playback changing wire in the direction of arrow ③.</li> </ul>	1 2 5 5 3 3
5	1 → 2 → 5	Main circuit board*	<ul style="list-style-type: none"> <li>• 1 screw .....(J)</li> <li>• 1 screw .....(K)</li> <li>• As shown in fig. 3, remove the record/ playback changing wire in the direction of arrow ③.</li> <li>• When measuring and adjusting, set the main P.C.B. as shown in Fig. 4. Then, connect the ground of main P.C.B. and the bottom case with a wire.</li> </ul>	3 3 3 4
6	1 → 6	FL meter circuit board	<ul style="list-style-type: none"> <li>• How to remove flat cable <b>D</b> .....(D)</li> <li>• 2 screws .....(P)</li> </ul>	3 5
7	1 → 6 → 7	Volume circuit board	<ul style="list-style-type: none"> <li>• How to remove flat cable <b>C</b> .....(D)</li> <li>• As shown in fig. 6, raise the clampers in the direction of arrow ① and remove the volume circuit board in the direction of arrow ②.</li> </ul>	3 6
8	1 → 8	Power supply circuit board	<ul style="list-style-type: none"> <li>• 2 screws .....(L)</li> <li>• How to remove flat cable <b>E</b> <b>F</b> .....(D)</li> </ul>	3 3
9	1 → 9	Power switch circuit board	<ul style="list-style-type: none"> <li>• 2 screws .....(M)</li> <li>• How to remove flat cable <b>F</b> .....(D)</li> </ul>	3 3
10	1 → 4 → 10	Motor assembly	<ul style="list-style-type: none"> <li>• 3 screws .....(N)</li> <li>• 2 screws .....(O)</li> </ul>	7 7

\* When adjusting in record mode, fix the rec/play switch (S1) on the main P.C.B. at "rec" by use of a clip or the like.

## ■ MEASUREMENT AND ADJUSTMENT METHODS

### NOTES:

- Before making the adjustment and measurement, be sure to read "Ref. No. 4: to remove main circuit board" of "DISASSEMBLY INSTRUCTION".

#### Tape speed adjustment VR

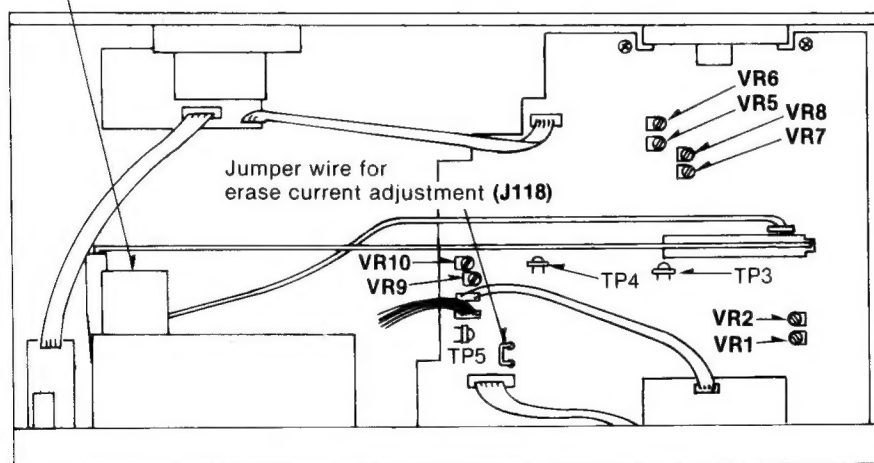


Fig. 1

**NOTES:** Set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean
- Make sure capstan and pinch roller are clean
- Judgeable room temperature  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )
- NR switch: OUT
- Tape selector: Normal
- Input selector: Line in
- Input level controls: Maximum
- Balance control: Center

**A Head azimuth adjustment**

**Condition:**

- Playback mode
- Normal tape mode

**Equipment:**

- VTVM
- Oscilloscope
- Test tape (azimuth)...QZZCFM

**L-CH/R-CH output balance adjustment**

1. Make connections as shown in fig. 2.

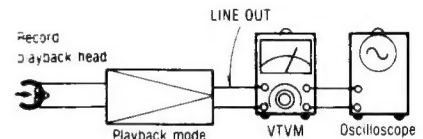


Fig. 2

2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 3 for maximum output L-CH and R-CH levels. When the output levels of L-CH and R-CH are not at maximum at the same point adjust as follows.
3. Turn screw (B) shown in fig. 3 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate angle B between angles A and C, i.e., point where L-CH and R-CH outputs are balanced. (Refer to figs. 3 and 4.)

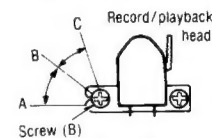


Fig. 3

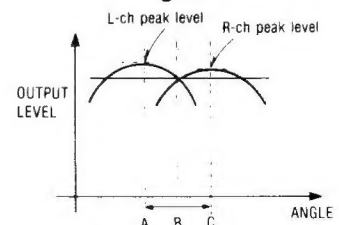


Fig. 4

**L-CH/R-CH phase adjustment**

4. Make connections as shown in fig. 5.
5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 3 so that pointers of the two VTVMs swing to maximum and a lissajous waveform as illustrated in fig. 6 is obtained on the oscilloscope.

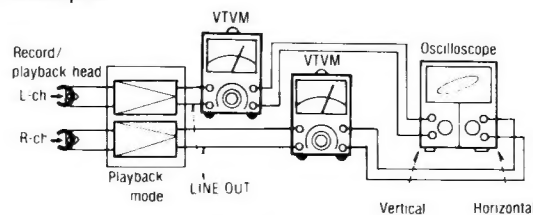


Fig. 5

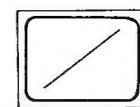


Fig. 6

**B Tape speed**

**Condition:**

- Playback mode

**Equipment:**

- Digital frequency counter
- Test tape...QZZCWAT

**Tape speed accuracy**

1. Test equipment connection is shown in fig. 7.
2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to the digital frequency counter.
3. Measure this frequency.
4. On the basis of 3,000Hz, determine value by following formula:
- $$\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100(\%) \quad \text{where, } f = \text{measured value}$$
5. Take measurement at middle section of tape.

**Standard value:  $\pm 1.5\%$**

6. If measured value is not within the standard value, adjust it by using the tape speed adjustment VR shown in fig. 1.

**Note:** Please use non metal type screwdriver when you adjust tape speed accuracy on this unit.

**Tape speed fluctuation**

Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:

$$\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100(\%) \quad f_1 = \text{maximum value, } f_2 = \text{minimum value}$$

**Standard value: Less than 1%**

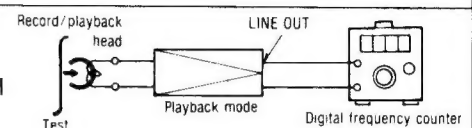


Fig. 7

### Ⓒ Playback frequency response

Condition:  
 • Playback mode  
 • Normal tape mode

Equipment:  
 • VTVM  
 • Oscilloscope  
 • Test tape...QZZCFM

1. Test equipment connection is shown in fig. 2.
2. Playback the frequency response portion of test tape (QZZCFM):
3. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.
4. Make measurements for both channels.
5. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 8).

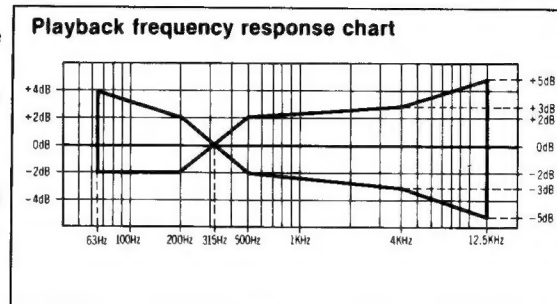


Fig. 8

### Ⓓ Playback gain

Condition:  
 • Playback mode  
 • Normal tape mode

Equipment:  
 • VTVM  
 • Oscilloscope  
 • Test tape...QZZCFM

1. Test equipment connection is shown in fig. 2.
2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at LINE OUT.
3. Make measurements for both channels.

**Standard value:  $0.4V \pm 1dB$**

#### Adjustment

1. If the measured value is not within the standard, adjust VR1 (L-CH) or VR2 (R-CH) (See fig. 1).
2. After adjustment, check "Playback frequency response" again.

### Ⓔ Erase current

Condition:  
 • Record mode  
 • Metal tape mode

Equipment:  
 • VTVM  
 • Oscilloscope

1. Test equipment connection is shown in fig. 9.
2. Place UNIT into metal tape mode.
3. Press the record and pause buttons.
4. Read voltage on VTVM and calculate erase current by following formula:

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R84}}{1 (\Omega)}$$

**Standard value:  $155 \pm 15mA$  (Metal)**

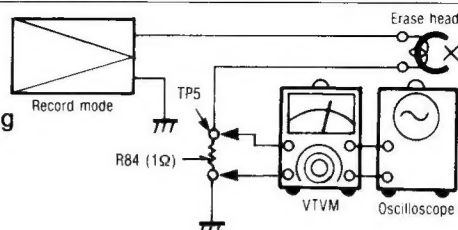


Fig. 9

5. If the measured value is not within the standard value adjust it by following the adjustment instructions.

#### Adjustment

- If the erase current is more than 170mA, cut the jumper wire (See fig. 1).



# Overall frequency response

## Condition:

- Record/playback mode
- Normal tape mode
- CrO<sub>2</sub> tape mode
- Metal tape mode
- Input level controls...MAX

## Equipment:

- VTVM
- ATT
- AF oscillator
- Oscilloscope
- Resistor (600Ω)

## • Test tape

- (reference blank tape)
- ...QZZCRA for Normal
- ...QZZCRX for CrO<sub>2</sub>
- ...QZZCRZ for Metal

## Note:

Before measuring and adjusting, the overall frequency response make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

(Recording equalizer is fixed)

1. Make connections as shown in fig. 11.
2. Place UNIT into normal tape mode and insert the normal reference blank test tape (QZZCRA).
3. Supply a 1kHz signal from the AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is -20dB below standard recording level (standard recording level = 0 VU).
5. Adjust the AF oscillator frequency to 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz and 10kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 5, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 10). (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)

If the curve is not within the charted specifications, adjust as follows;

Overall frequency response chart (Normal)

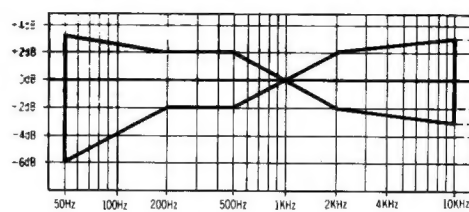


Fig. 10

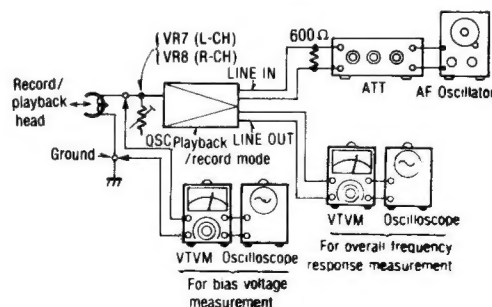


Fig. 11

## Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 10) as shown in fig. 12.

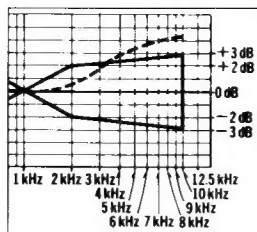


Fig. 12

- 1) Increase bias current by turning VR7 (L-CH) and VR8 (R-CH). (See fig. 1 on page 6.)
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 10.)
- 3) If the curve still exceeds the specifications (fig. 10), increase bias current further and repeat steps 5 and 6.

## Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 10) as shown in fig. 13.

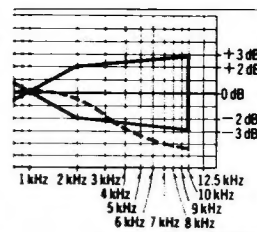


Fig. 13

- 1) Reduce bias current by turning VR7 (L-CH) and VR8 (R-CH).
- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 10.)
- 3) If the curve still falls below the charted specifications (fig. 10), reduce bias current further and repeat steps 5 and 6.

7. Place UNIT into CrO<sub>2</sub> tape mode.

8. Change test tape to CrO<sub>2</sub> reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO<sub>2</sub> tapes (fig. 14).

9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 14).

10. Confirm that bias voltage are approximately as follows when the UNIT is set at different tape mode.

- Measure the voltage across the head using a VTVM.

around 6.2V (Normal position)  
Reference value: around 8.9V (CrO<sub>2</sub> position)  
around 15.7V (Metal position)

Overall frequency response chart (CrO<sub>2</sub>, Metal)

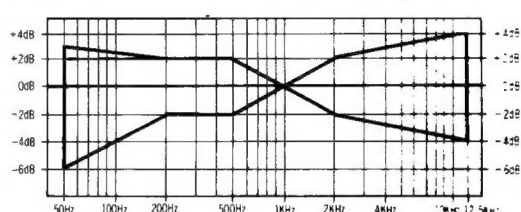


Fig. 14



### Overall gain

#### Condition:

- Record/playback mode
  - Normal tape mode
  - Input level controls...MAX
  - Standard input level;
- MIC .....  $-72 \pm \frac{5}{3}$  dB
- LINE IN .....  $-24 \pm \frac{4}{2}$  dB

#### Equipment:

- VTVM
  - AF oscillator
  - ATT
  - Oscilloscope
  - Resistor (600Ω)
  - Test tape
- (reference blank tape)
- ...QZZCRA for Normal

1. Test equipment connection is shown in fig. 15.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1 kHz signal through ATT (-24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes  $0.4V \pm 1$  dB.
6. Playback recorded tape, and make sure that the output level at LINE OUT becomes  $0.4V \pm 1$  dB.
7. If measured value is not  $0.4V \pm 1$  dB, adjust it by using VR5 (L-CH) or VR6 (R-CH).
8. Repeat from step (2).

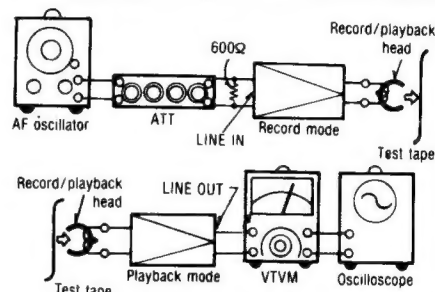


Fig. 15

### Fluorescent meter

#### Condition:

- Record mode
- Input level controls...MAX

#### Equipment:

- VTVM
- AF oscillator
- ATT
- Oscilloscope
- Resistor (600Ω)

1. Make connections as shown (See fig. 16).
2. In the recording pause mode, apply 1 kHz (-24dB) to LINE IN.
3. Adjust ATT so that output level LNE OUT is  $0.4V \pm 1$  dB.
4. At this time, check that 0dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 17).
5. If the indicator is not lighted halfway as described in step 4, adjust VR9 (L-CH), VR10 (R-CH).
6. Repeat adjustments and checks at steps 3, 4 and 5 two or three times.

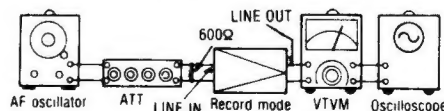


Fig. 16

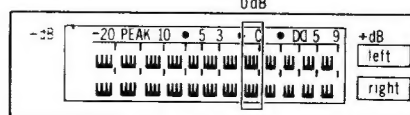


Fig. 17

### Dolby NR circuit

#### Condition:

- Record mode
- Dolby NR switch...IN/OUT
- Dolby NR select switch...B/C
- Input level controls...MAX

#### Equipment:

- VTVM
- AF oscillator
- ATT
- Oscilloscope
- Resistor (600Ω)
- Balance control...Center

#### Record side

- Check of the Dolby-B type encoder characteristics
  1. Make connections as shown in fig. 18.
  2. Set the unit to the record mode. (NR select switch is OUT.)
  3. Apply a 1 kHz signal to LINE IN.
  4. Adjust the ATT so that the output level at TP3 (L-CH) and TP4 (R-CH) is 12.3mV.
  5. The output level at pin 21 should be 0dB.
  6. Set the NR select switch to B, and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is  $+6dB \pm 2.5dB$ .
  7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 21 should be 0dB.
  8. Set the NR select switch to B and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is  $+8dB \pm 2.5dB$ .
- Check of the Dolby-C type encoder characteristics
  9. Repeat steps 1-5 above.
  10. Set the NR select switch to C and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is  $+11.5dB \pm 2.5dB$ .
  11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 21 should be 0dB.
  12. Set the NR select switch to C and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is  $+8.5dB \pm 2.5dB$ .

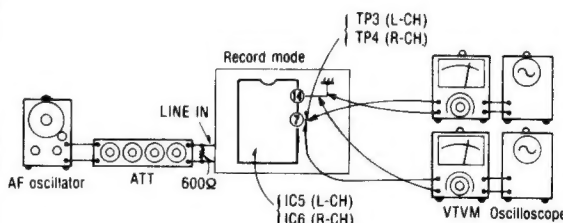
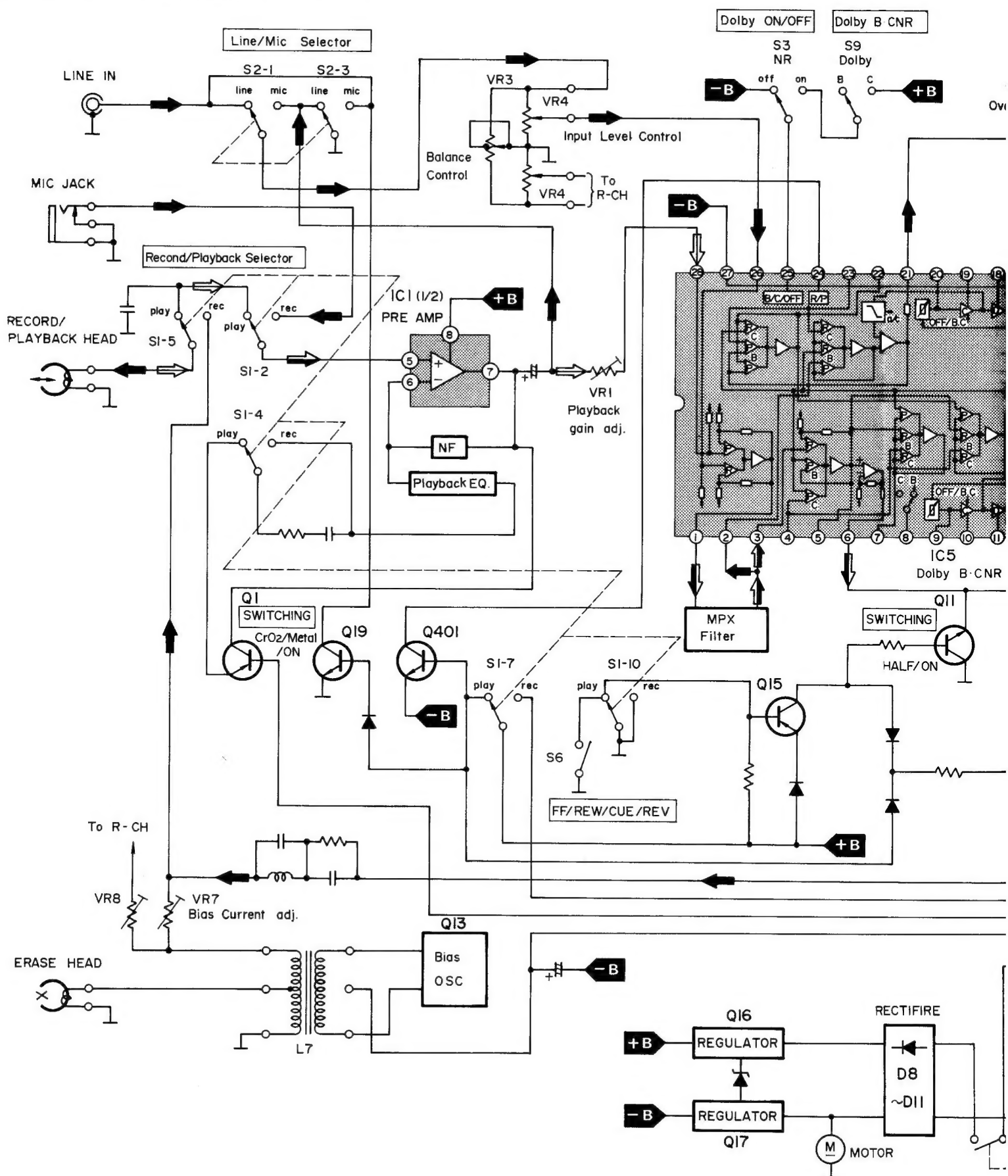
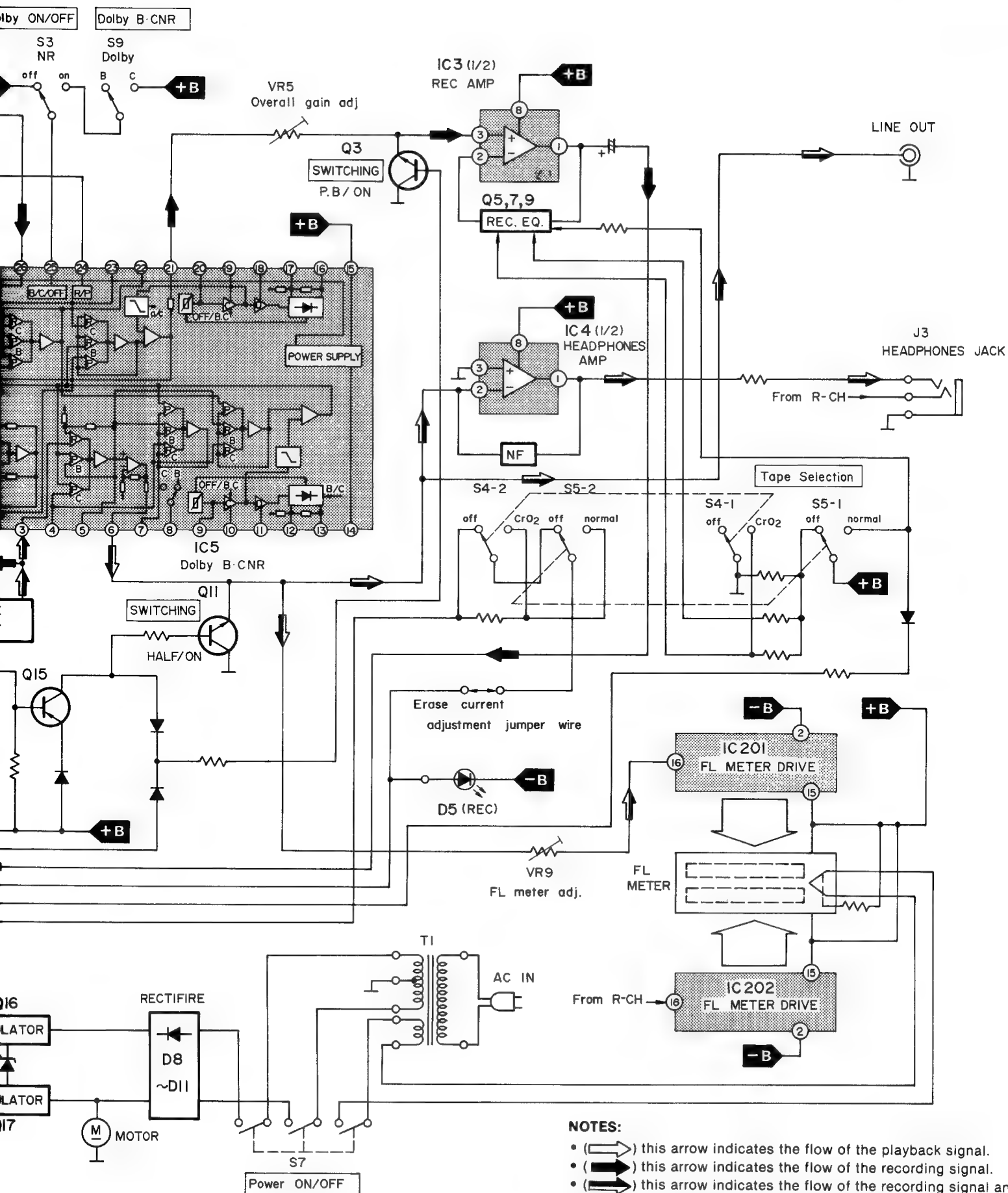


Fig. 18

# BLOCK DIAGRAM (L-CH ONLY)





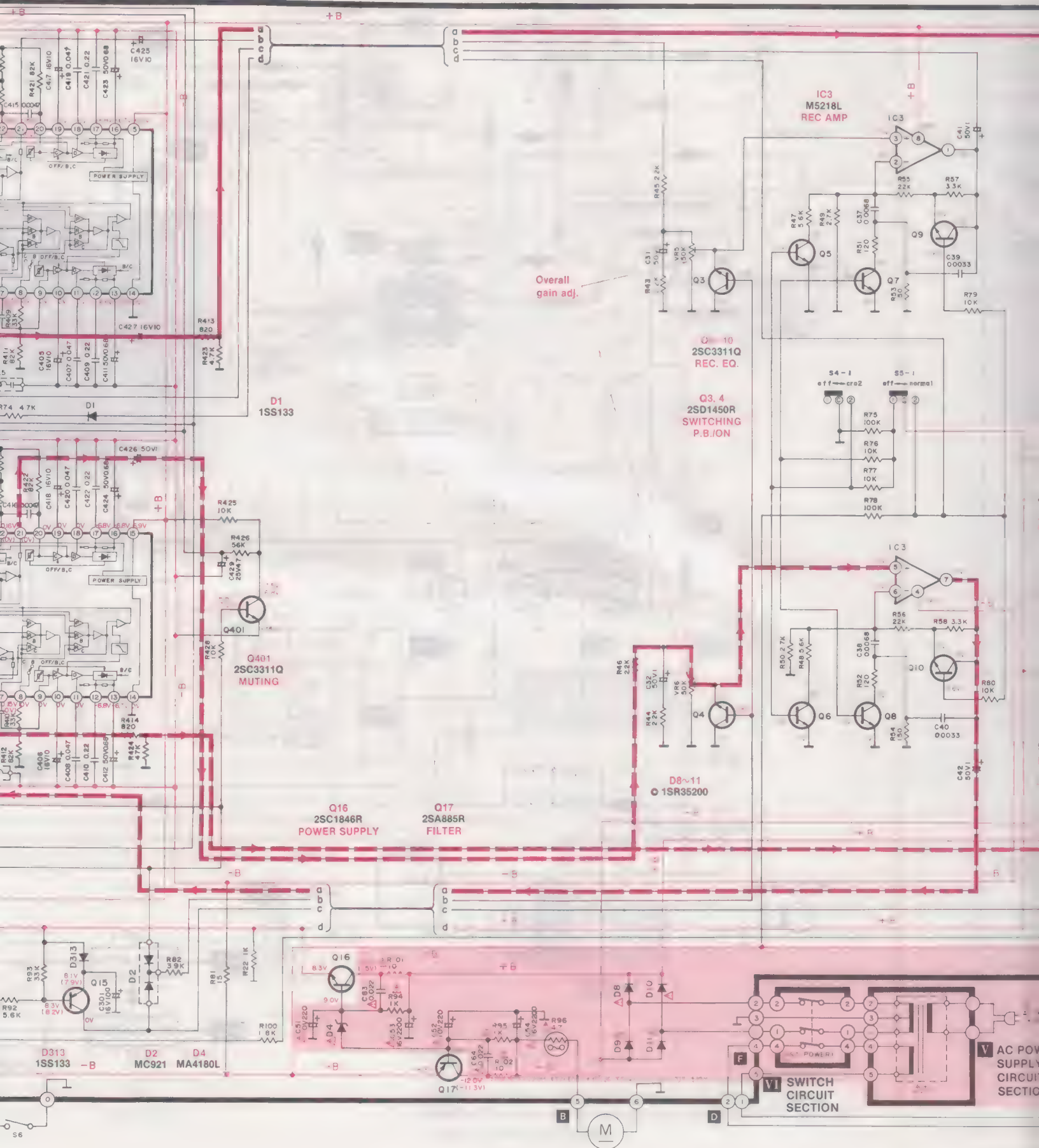
## NOTES:

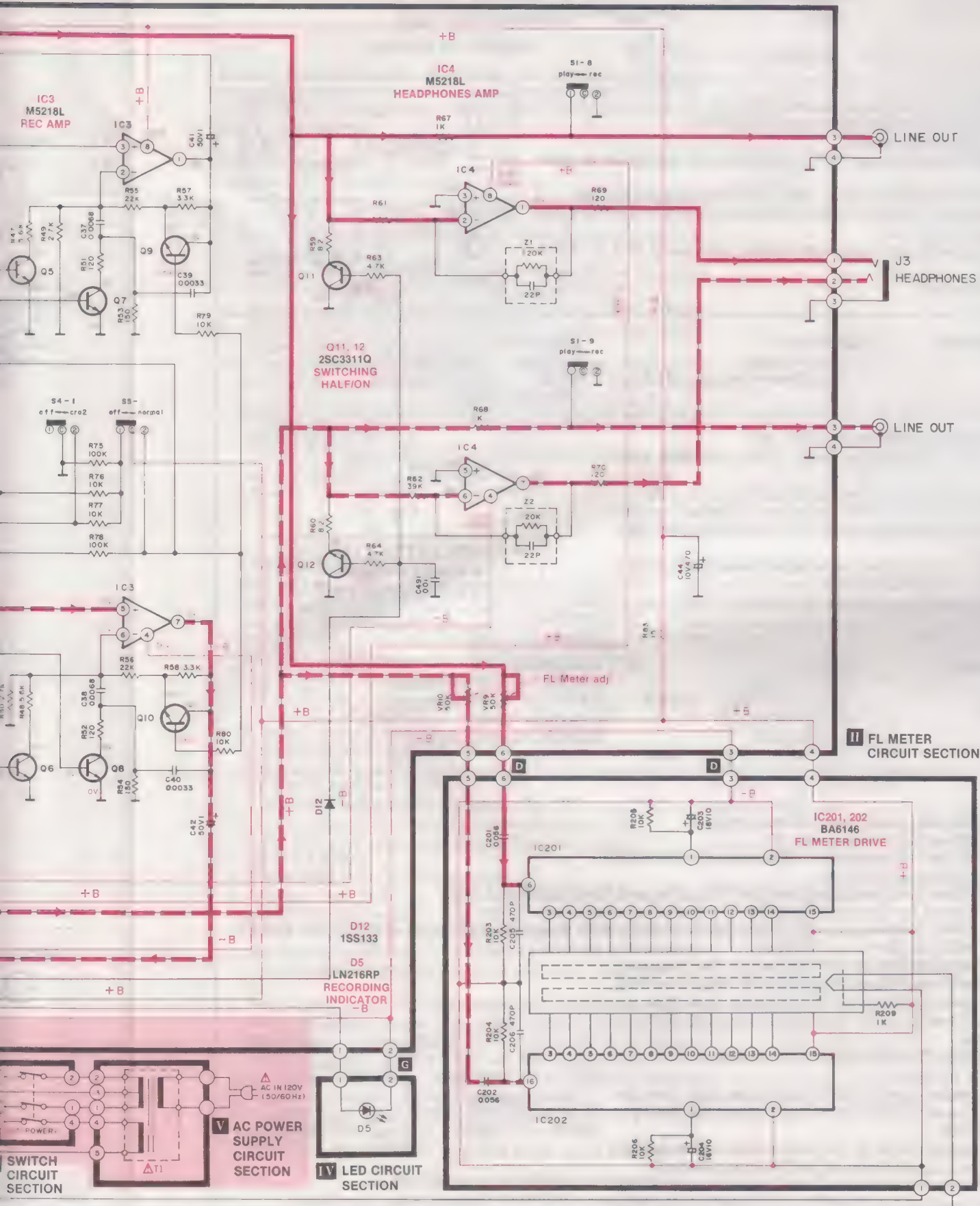
- (→) this arrow indicates the flow of the playback signal.
- (→) this arrow indicates the flow of the recording signal.
- (→) this arrow indicates the flow of the recording signal and playback signal combination.

### MAIN CIRCUIT SECTION











- S1-1~S1-9 : Record/playback switch (shown in **playback** position).
- S2-1~S2-4 : Input select switch (shown in **line** in position).
- S3 : Dolby NR switch (shown in **OFF** position).
- S4-1, S4-2 : CrO<sub>2</sub> tape select switch (shown in **OFF** position).
- S5-1, S5-2 : Normal tape select switch (shown in **OFF** position).
- S6 : FF/CUE/REW/REV switch (shown in **OFF** position).
- S7 : Power ON/OFF switch (shown in **OFF** position).
- S8 : Dolby B • C NR selector (shown in **Dolby B** position).
- VR1, 2 : Playback gain adjustment VR.
- VR3 : Balance control.
- VR4 : Input level control.
- VR5, 6 : Overall gain adjustment VR.
- VR7, 8 : Bias current adjustment VR.
- VR9, 10 : FL meter adjustment VR.
- L1, 2 : Bias trap coil.
- L3, 4 : MPX filter.
- L7 : Bias oscillation coil.

Resistance are in ohms ( $\Omega$ ), 1/4 watt unless specified otherwise.  
1 K = 1,000( $\Omega$ ), 1 M = 1,000 k( $\Omega$ ).

Capacity are in micro-farads ( $\mu\text{F}$ ) unless specified otherwise.

All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.

Voltage values at record mode.

..Voltage values at CrO<sub>2</sub> tape mode.

..Voltage values at Metal tape mode

..Voltage values at Stop mode.

Voltage value at which the noise reduction switch is turned on.

For measurement use-VTVM

**+ B** ) indicates B + (bias).

**B** ) indicates B – (bias).

→ indicates the flow of the playback signal. (NR out).

(■ ■ ■) indicates the flow of the recording signal. (NR out).

Important safety notice 3)

The shaded area on the schematic diagram is designated for features important for protection from the public and the environment.

When servicing it is essential that only manufacturer recommended parts be used for the critical components in the shaded areas of the schematic.

The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ★ mark, the production part No. are different from the replacement part No.

Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

## ■ ELECTRICAL PARTS LIST

NOTES: RESISTORS

ERD	Carbon
ERG	...Metal-oxide
ERS	. Metal-oxide
ERO	...Metal-film
ERX	Metal-film
ERQ	.....Fuse type metallic
ERC.....	Solid
ERF.....	Cement

## REPLACEMENT PARTS LIST

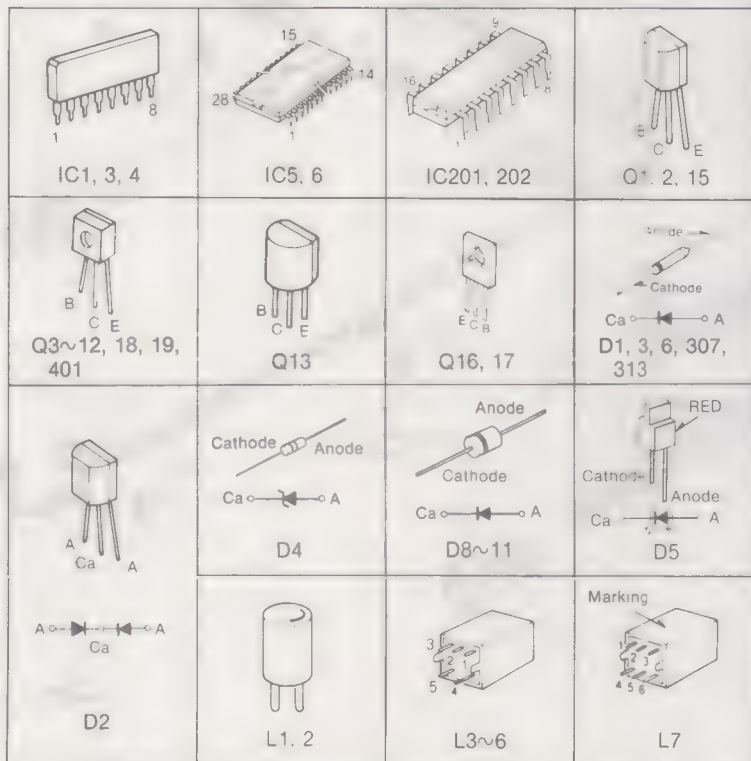
**Important safety notice**

Components identified by  $\Delta$  mark have special characteristics important for safety.

When replacing any of these components, use only manufacturer's specified parts.

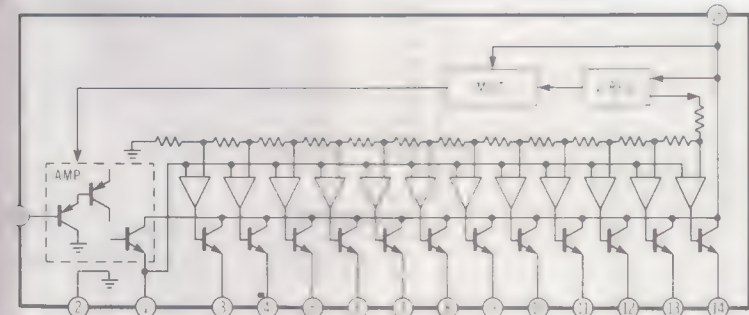
Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
RESISTORS		R 85	ERD25FJ100	C 9, 10	ECQM1H103JZ	INTEGRATED CIRCUITS
R 3, 4	ERD25FJ101	R 86, 87	ERD25FJ562	C 11, 12	ECEA1CU100	
R 5, 6	ERD25TJ473	R 88	ERD25FJ100	C 13, 14	ECKD1H681KB	
R 7, 8	ERD25FJ820	R 89	ERD25FJ471	C 31, 32	ECEA1H810B	IC 1
R 9, 10	ERD25TJ334	R 90	ERD25FJ271	C 37, 38	ECQM1H682JZ	JC 3, 4
R 11, 12	ERD25FJ682	R 91	ERD25FJ390	C 39, 40	ECQM1H332JZ	IC 5, 6
R 13, 14	ERD25FJ562	R 92	ERD25FJ562	C 41, 42	ECEA1HU010	IC 201, 202
R 15, 16	ERD25TJ104	R 93	ERD25TJ333	C 43, 44	ECEA1AU471	TRANSISTORS
R 17, 18	ERD25FJ222	R 94, 95	ERD25FJ102	C 45	ECQP18B3JZ	
R 19, 20	ERD25TJ223	R 96	ERD2FCJ4R7	C 46	ECEA1CU101	
R 21	ERD25FJ103	R 97	ERD25FJ820	C 47	ECFDD153KXY	Q 1, 2
		R 100	ERD25FJ182	C 48	ECFDD822KXY	Q 3, 4
		R 101, 102		C 50	ECEA1CU100	Q 5, 6, 7
R 22	ERD25FJ102		ERDS1FJ100	C 51, 52	ECEA1AU221	Q 13
R 25, 26	ERD25FJ102	R 203, 204, 205, 206		C 53, 54	ECEA1CU222	Q 15
R 43, 44, 45, 46			ERD25FJ103	C 55, 56	ECKD1H223ZF	Q 16
	ERD25FJ222	R 209	ERD25FJ102			Q 17
R 47, 48	ERD25FJ682	R 401, 402	ERD25FJ242	C 57, 58	ECKD2H121KB	Q 18, 19
R 49, 50	ERD25FJ272	R 403, 404	ERD25FJ562	C 59, 60	ECQM1H102JZ	Q 401
R 51, 52	ERD25FJ560	R 405, 406	ERD25FJ332	C 63, 64	ECKD1H223ZF	DIODES
R 53, 54	ERD25FJ181	R 407, 408	ERD25FJ102	C 201, 202	ECFDD563KXY	
R 55, 56	ERD25TJ223	R 409, 410	ERD25TJ333	C 203, 204	ECEA1CU00	
R 57, 58	ERD25FJ822	R 411, 412	ERD25TJ823	C 205, 206	ECKD1H471KB	D 1
R 59, 60	ERD25FJ8R2	R 413, 414	ERD25FJ821	C 301	ECEA1CU101	D 2
		R 415, 416	ERD25FJ512	C 302	ECKD1H103ZF	D 3
R 61, 62	ERD25TJ393	R 417, 418	ERD25TJ683	C 401, 402	ECDD1H820K	D 4
R 63, 64, 65, 66		R 419, 420	ERD25FJ222	C 403, 404	ECKM1H472JZ	D 5
	ERD25FJ472	R 421, 422	ERD25TJ823	C 405, 406	ECEA1CU100	D 8, 9, 10
R 67, 68	ERD25FJ102	R 423, 424	ERD25FJ392	C 407, 408	ECQM1H473JZ	D 12 D 313
R 69, 70	ERD25FJ121	R 425	ERD25FJ103	C 409, 410	ECQM1H224JZ	
R 71, 72	ERD25FJ153	R 426	ERD25TJ563	C 411, 412	ECEA50ZP68	
R 73	ERD25FJ103	R 427	ERD25TJ223	C 413, 414	ECQM1H103JZ	VARIABLE COMPONENTS
R 74	ERD25FJ472	R 428	ERD25FJ103	C 415, 416	ECQM1H472JZ	
R 75	ERD25TJ104	R 429	ERD25TJ223	C 417, 418	ECEA1CU100	
R 76, 77	ERD25FJ103	CAPACITORS		C 419, 420	ECQM1H473JZ	VR 1, 2
R 78	ERD25TJ104			C 421, 422	ECQM1H224JZ	VR 3
R 79, 80	ERD25FJ103	C 423, 424	ECEA50ZP68	C 425, 426, 427, 428	VR 5, 6	
R 81	ERD25FJ150	C 1, 2	ECKD1H821KB	C 429, 430	ECEA1CU100	VR 7, 8
R 82	ERD25FJ392	C 3, 4	ECEA1EU4R7	C 431, 432	ECQM1H224JZ	VR 9, 10
R 83	ERD25FJ150	C 5, 6	ECEA0JU101			
R 84	ERD25FJ1R0	C 7, 8	ECCD1H181K			

## TERMINATIONS



### EQUIVALENT CIRCUIT

C201, 202: BA6146



\* Input level control...MAX

- \* Balance control.....Center

## SPECIFICATIONS

Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO <sub>2</sub> ...QZZCRZ for Metal	Normal..... Less than 3.5% CrO <sub>2</sub> , Metal..... Less than 4%
Overall S/N ratio * Test tape...QZZCRA	Greater than 43dB (without NAB filter)



## ■ CIRCUIT BOARDS AND WIRING CONN

## CAPACITORS

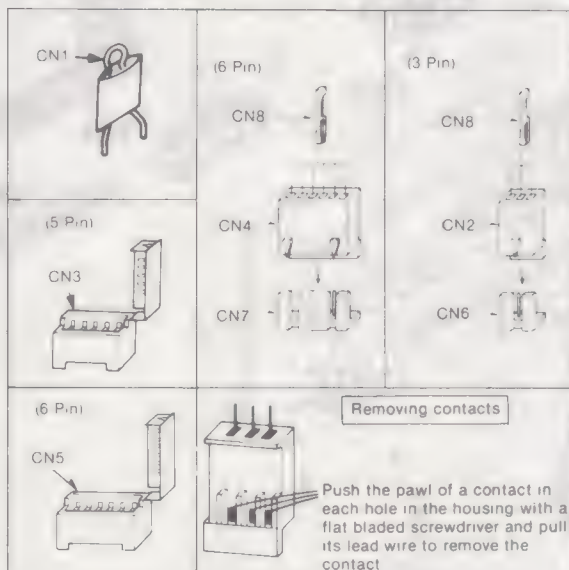
Carbon	ECBA	Ceramic
Meta-oxide	ECGC	Ceramic
Meta-oxide	ECK	Ceramic
Metallum	ECC	...Ceramic
Metallum	ECF	...Ceramic
Fuse type metallic	ECQM	...Polyester film

ECQE	Polyester film
ECQF	...Polypropylene
ECED	...Electrolytic
ECEDN	...Non polar electrolytic
ECQS	Polystyrene
ECSD	Tantalum
QCS	...Tantalum

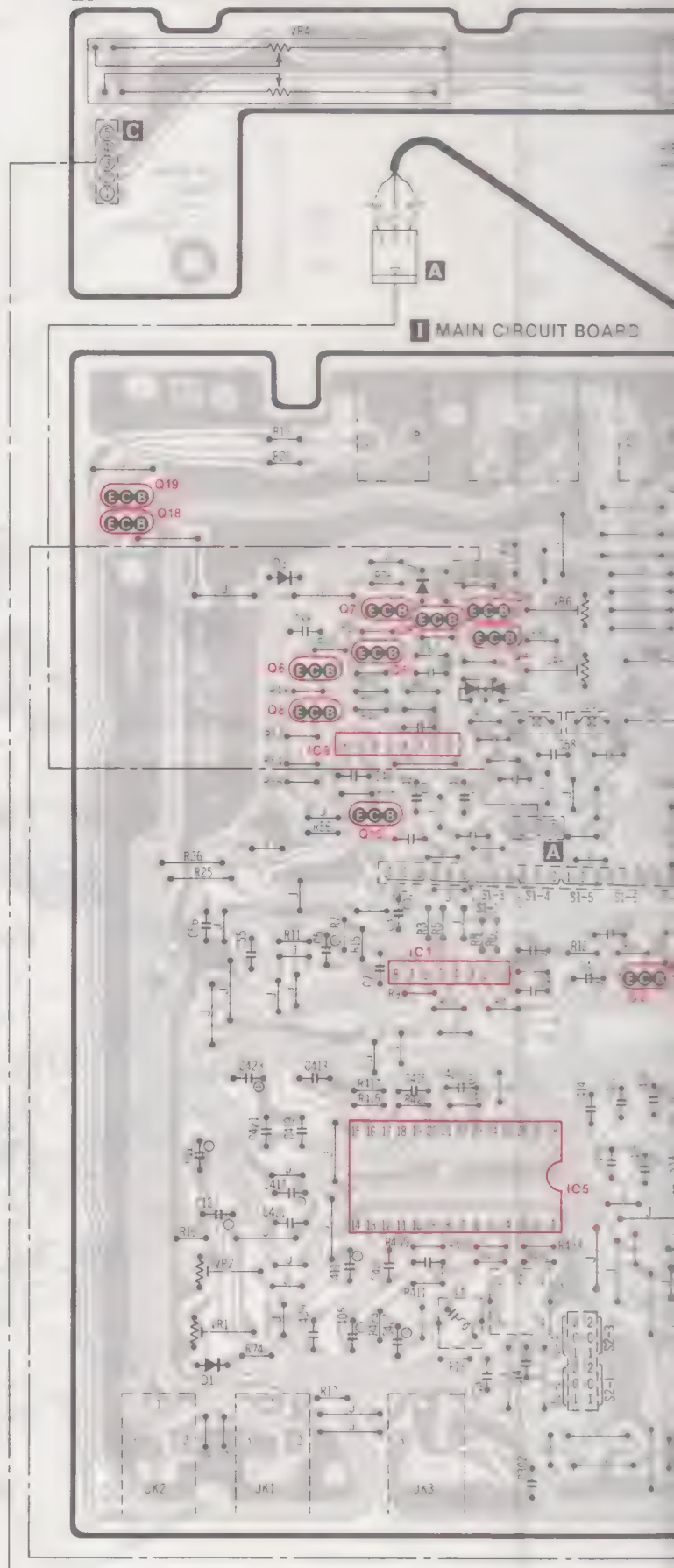
Ref No	Part No	Part Name & Description
<b>INTEGRATED CIRCUITS</b>		
IC 1	M5219L	
JC 3, 4	M5218L	
IC 5, 6	TEA0665	
IC 201, 202	BA6146	
<b>TRANSISTORS</b>		
Q 1, 2	2SA1115EF	
Q 3, 4	2SD1450R	
Q 5, 6, 7, 8, 9, 10, 11, 12	2SC3311Q	
Q 13	2SD592	
Q 15	2SA1115EF	
Q 16	2SC1846R	
Q 17	2SA885R	
Q 18, 19	2SC3311Q	
Q 401	2SC3311Q	
<b>DIODES &amp; RECTIFIERS</b>		
D 1	1SS133	
D 2	MC921	
D 3	1SS133	
D 4	MA4180L	
D 5	LN216RP	
D 8, 9, 10, 11	SM112	
D 12	1SS133	
D 313	1SS133	
<b>VARIABLE RESISTORS</b>		
VR 1, 2	EVNM4AA00B24	
VR 3	EWANG5X05G15	
VR 4	EWAPB1X05A54	
VR 5, 6	EVNM4AA00B54	
VR 7, 8	EVNM4AA00B15	
VR 9, 10	EVNM4AA00B54	

Ref No	Part No	Part Name & Description
<b>COILS</b>		
L 1, 2	QLQX0343KWA	Bias Trap Coil
L 3, 4	QLM9Z10K	MPX Filter
L 5, 6	ELM7Q306A	Skewing Network
L 7	QLB0198KA	Bias Oscillation Coil
<b>COMBINATION PARTS</b>		
Z 1, 2	EXRP220K124	
<b>TRANSFORMER</b>		
T 1	QLPP65EKC	AC Power Transformer
<b>SWITCHES</b>		
S 1	QSSA209AT	Slide Switch (Record/Playback Selector)
S 2, 3, 4, 5	QSWX604T	Push Switch
S 6	QSB0251IU	Leaf Switch (FF/CUE/REW/REV)
S 7	QSW4217T	Push Switch (Power ON/OFF)
S 8	QSWX604T	Push Switch
<b>JACKS</b>		
J 1, 2	QJA0454C	Microphone Jack
J 3	QJA0455C	Headphones Jack
<b>CONNECTORS</b>		
CN 1	QJT1090	Check Pin
CN 2	QJS1921TN	3 Pin Socket
CN 3	QJS1961S	Jumper Socket (5 Pin)
CN 4	QJS1922TN	6 Pin Socket
CN 5	QJS1993S	Jumper Socket (6 Pin)
CN 6	QJP1921TN	3 Pin Plug
CN 7	QJP1922TN	6 Pin Plug
CN 8	QJT1054	Contact

## CONNECTORS

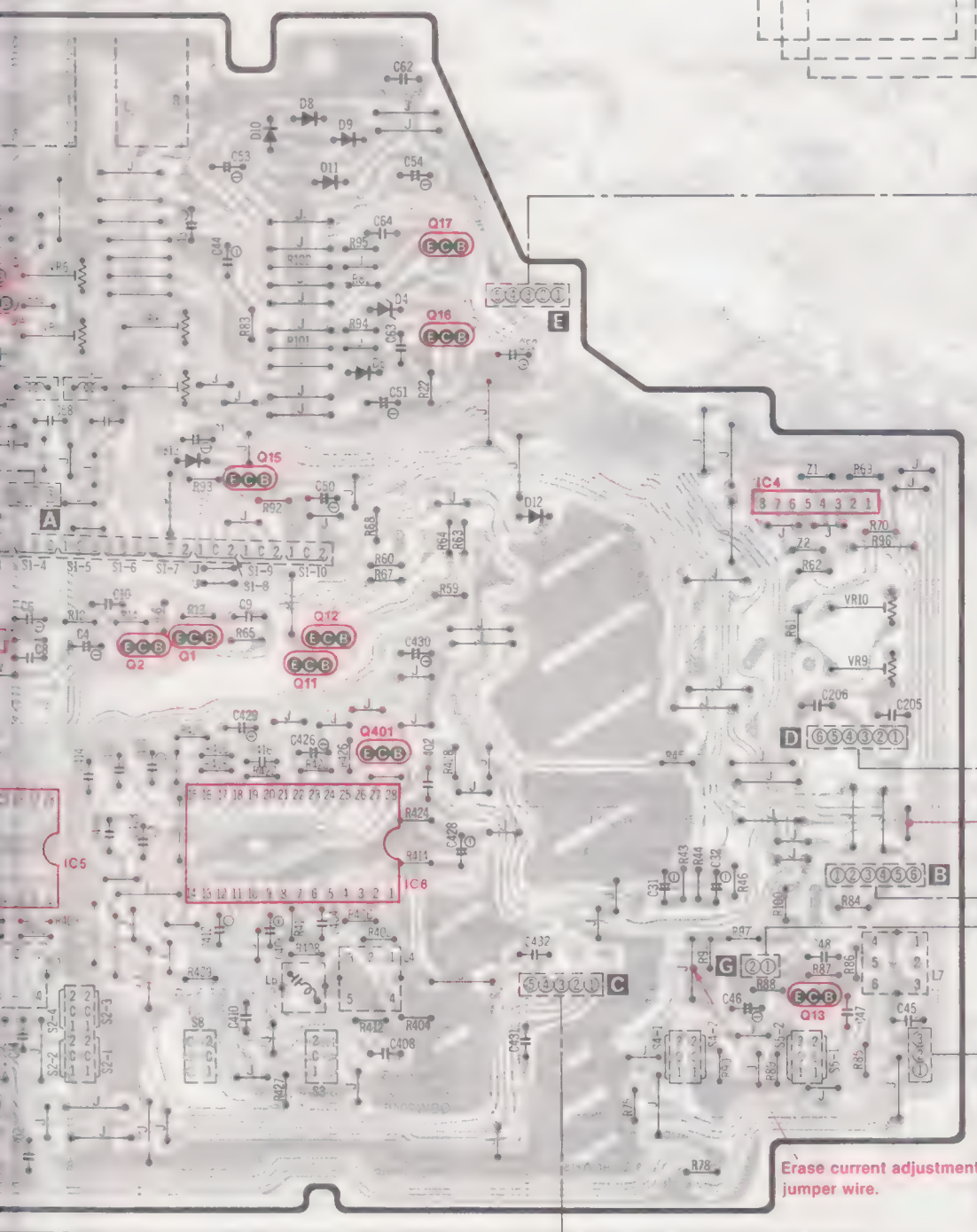


## III VOLUME CIRCUIT BOARD

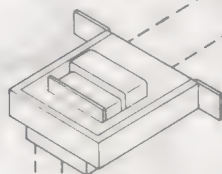




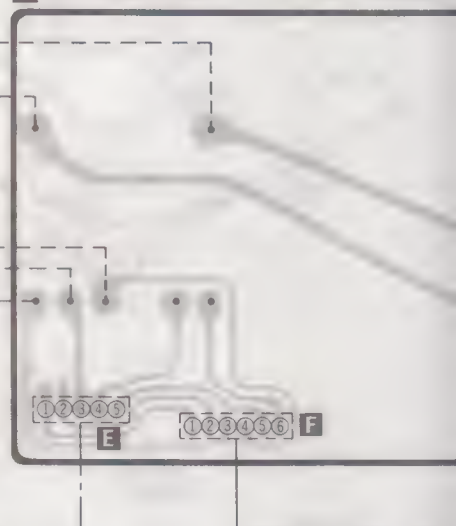
CIRCUIT BOARD



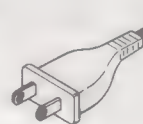
T1: AC POWER TRANSFORMER



V AC POWER SUPPLY CIRCUIT BOARD



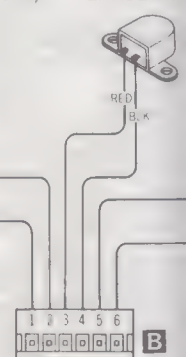
AC POWER CORD



LUG TERMINAL  
(To mechanism unit)

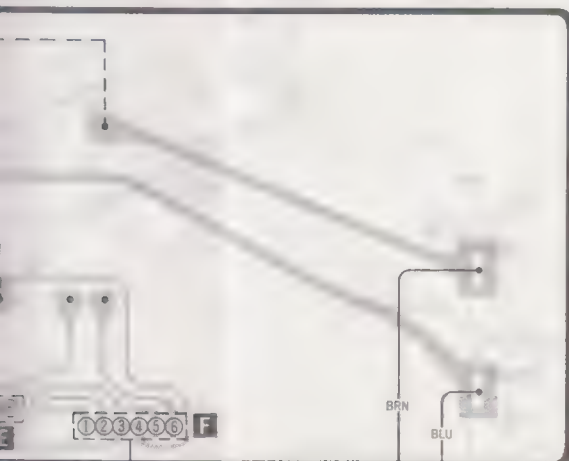
ERASE HEAD

S6: FF/REW SWITCH





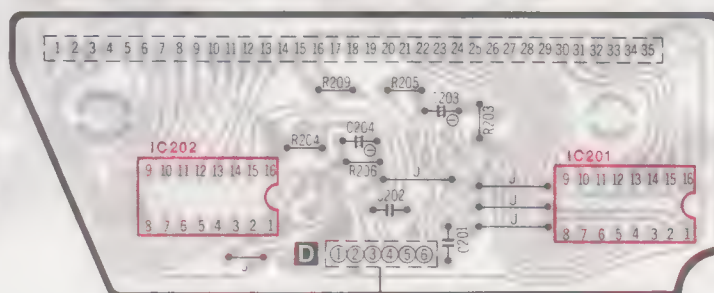
## POWER SUPPLY CIRCUIT BOARD



## VI SWITCH CIRCUIT BOARD



## II FL METER CIRCUIT BOARD

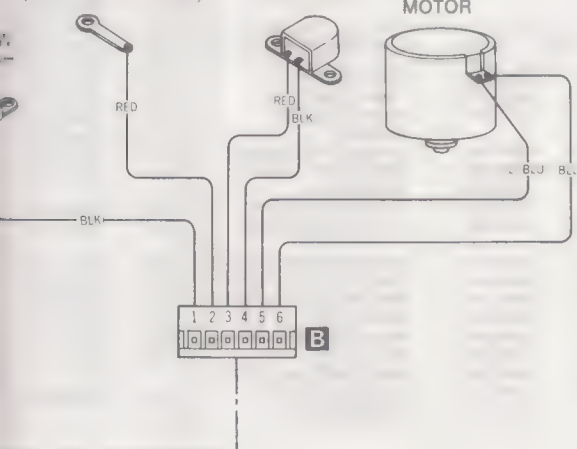


## IV LED CIRCUIT BOARD

LUG TERMINAL  
(To mechanism unit)

ERASE HEAD

MOTOR



## NOTES:

BLK .....Black	ORG .....Orange
BLU .....Blue	PNK .....Pink
BRN .....Brown	RED .....Red
GRY .....Gray	SLD .....Shield Wire
GRN .....Green	VLT .....Violet
L. BLU .....Light Blue	WHT .....White
NIL .....No Color Mark	YEL .....Yellow

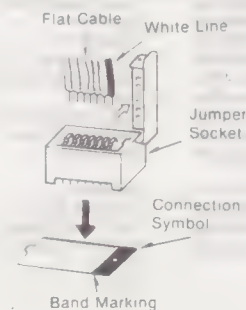
## NOTES:

- The circuit shown in [ ] on the conductor side indicates printed circuit on the back side of the printed circuit board.

- This circuit board diagram may be modified at any time with the development of new technology.

## CONNECTION OF A FLAT CABLE

Connect the flat cable to the jumper socket so that the white line on the flat cable corresponds to the band mark side of the connection symbol (yellow or white symbol on the PC board) for the jumper socket. (This connection may differ from those for conventional models.)



# MECHANICAL PARTS LOCATION

(Front View)

A

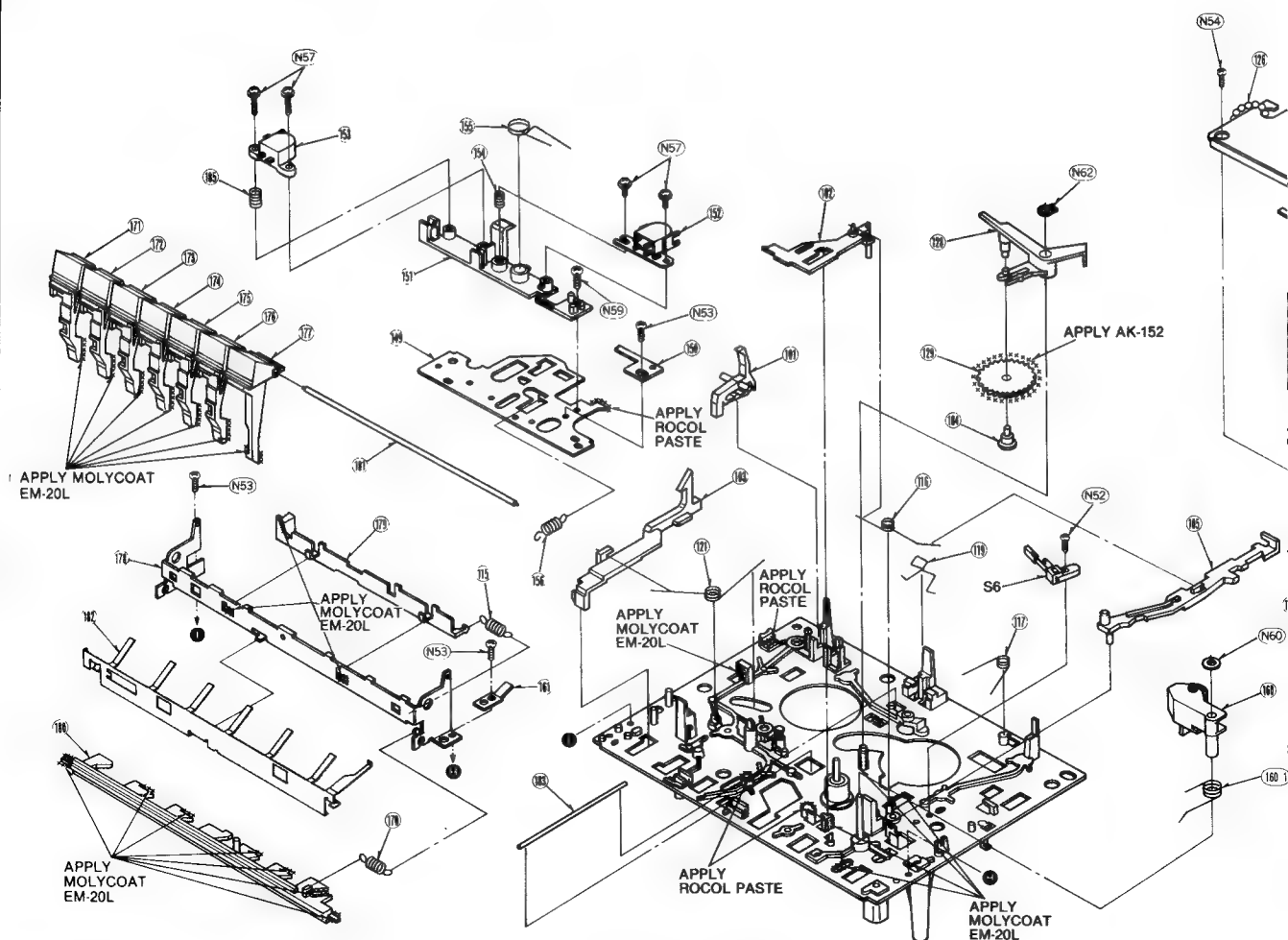
B

C

D

E

F



## NOTE:

When changing mechanism parts, apply the specified grease and oil to the area marked "xx" shown in the drawing "Mechanical Parts Location".

- Molycoat: Lubricating oil
- Rocol paste: Lubricating oil
- AK-152: Lubricating oil

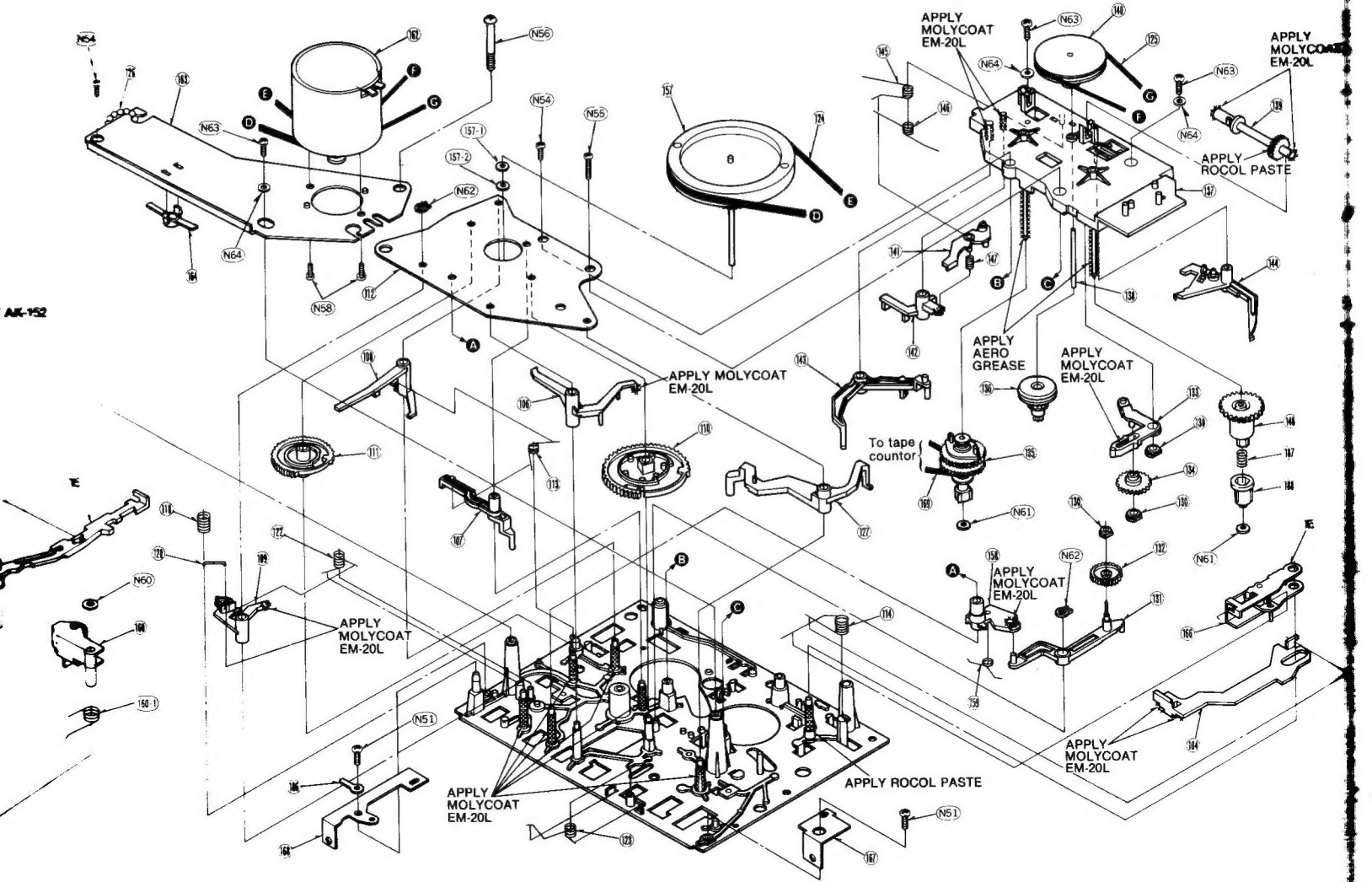
## SPECIFICATIONS

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	45 + 15 - 10g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.07% (WRMS)

## REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
<b>MECHANICAL PARTS</b>			115	QBT1868D	Obstruction Rod Spring	133	QML4099	Rewind Lever
101	QML4156	Erase Safety Lever	116	QBN2039	Auto-Stop Rod Spring	134	QDG1336	Rewind Gear
102	QMR2144	Fast Forward Rod	117	QBN2044	Auto-Stop Lever Spring	135	QXD0158	Takeup Reel Table Assembly
103	QMR2145	Eject Rod	118	QBC1483	Pause Pin Spring	136	QXG1082	Takeup Gear Assembly
104	QMR2146	Record Rod	119	QBS1143	Half Retain Spring	137	QXK2902	Sub Chassis Assembly
105	QMR2149	Auto-Stop Rod	120	QBS1128	Lock Pin	138	QMS2634	Takeup Axis
106	QML4093	Main Control Lever	121	QBN2031	Main Lever Spring	139	QDG1339	Auto-Stop Cam Gear
107	QML4094	Sub Lever	122	QBN2032	Pause Return Spring	140	QDP1989	Intermediation Pulley
108	QML4095	Sub Control Lever	123	QBN2034	Main Control Lever Spring	141	QML4101	Auto-Stop Detection Lev
109	QML4096	Pause Lock Lever	124	QDB0360	Capstan Belt	142	QML4102	Auto-Stop Driving Lever
110	QDG1330	Main Gear	125	QDB0359	Fast Forward Belt	143	QML4103	Auto-Stop Change Lever
111	QDG1331	Sub Gear	126	QTD1181	Wire Clamper	144	QML4108	Brake Lever
112	QMF2333	Pressure Plate	127	QXL1689	Main Lever Assembly	145	QBN2040	Auto-Stop Release Sprin
113	QBN2035	Sub Lever Spring	128	QML4097	Takeup Lever	146	QBN2046	Brake Spring
114	QBN2036	Record/Playback Arm Spring	129	QDG1333	Takeup Intermediate Gear	147	QBC1484	Auto-Stop Pressure Spr
			130	QMB1434	Cap	148	QDR1179	Supply Reel Table
			131	QML4098	Fast Forward Lever	149	QMK2108	Head Base Plate
			132	QDG1335	Fast Forward Gear			

(Rear View)



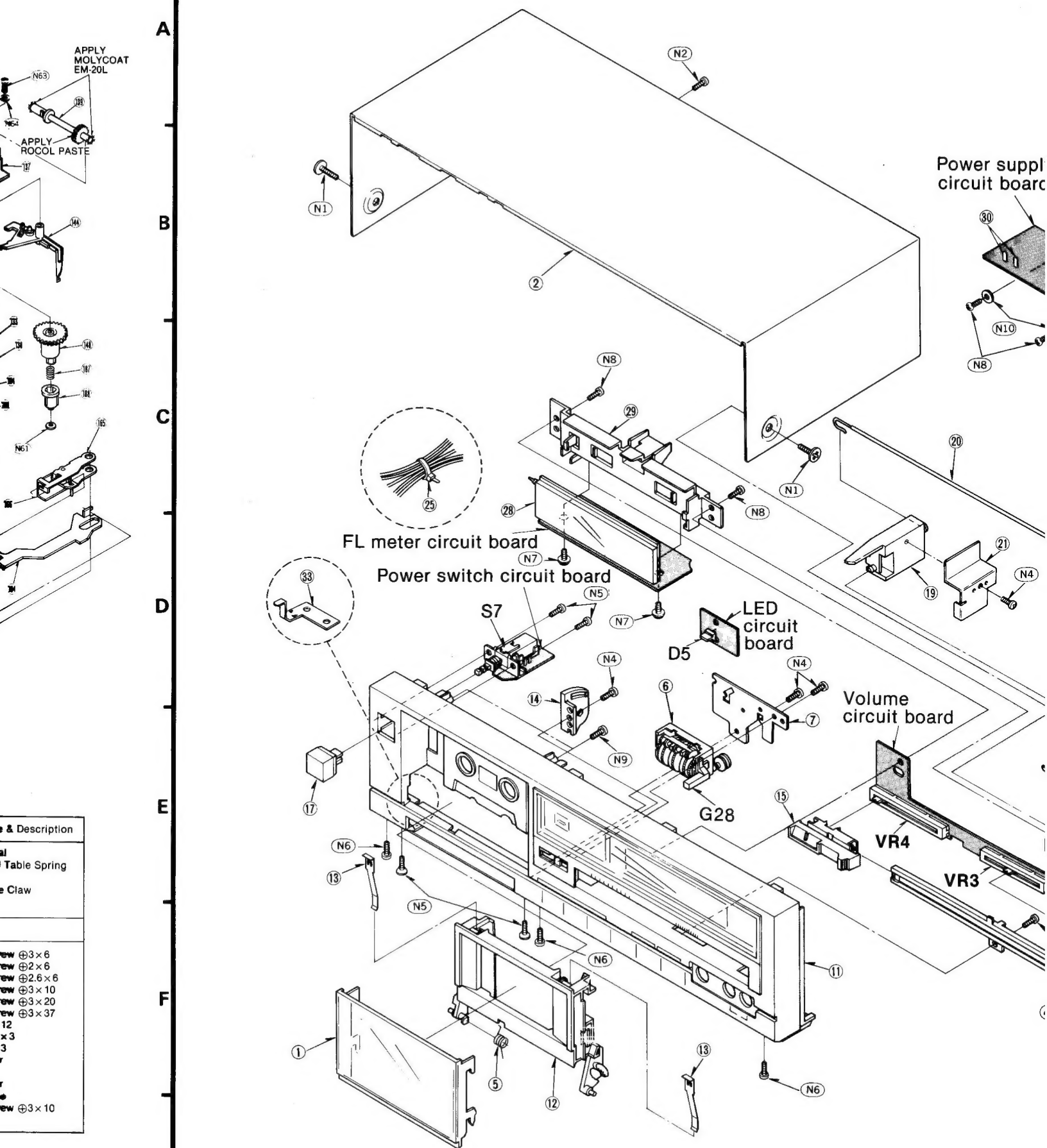
AK-152

Part Name & Description

Reel Lever  
Reel Gear  
Takeup Reel Table  
Assembly  
Takeup Gear Assembly  
Sub Chassis Assembly  
Takeup Axis  
Auto-Stop Cam Gear  
Intermediation Pulley  
Auto-Stop Detection Lever  
Auto-Stop Driving Lever  
Auto-Stop Change Lever  
Brake Lever  
Auto-Stop Release Spring  
Brake Spring  
Auto-Stop Pressure Spring  
Supply Reel Table  
Head Base Plate

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
150	QMF2334	Head Adjustment Plate	167	QMA4766	Mechanism Angle-L	186	QJT0015	Lug Terminal
151	QMZ1314	Head Spacer	168	QMA4767	Mechanism Angle-R	187	QBC1372	Supply Reel Table Spring
152	QWY4165G	Record/Playback Head	169	QDB0189	Counter Belt	188	QMB1336	Supply Drive Claw
153	QWY2138G	Erase Head	170	QBC1500	Lock Rod Spring	SCREWS, NUTS AND WASHERS		
154	QBC1278	Head Spring	171	QXL1697	Eject Button Assembly			
155	QBN2033	Head Pressure Spring	172	QXL1698	Record Button Assembly			
156	QBT2018	Head Return Spring	173	QXL1699	Playback Button Assembly			
157	QXF0237	Flywheel Assembly	174	QXL1700	Stop Button Assembly			
157-1	QBW2049	Poly Washer	175	QXL1701	Rewind Button Assembly			
157-2	QBW2026	Washer	176	QXL1702	Fast Forward Button Assembly			
158	QML4100	Change Lever	177	QXL1703	Pause Button Assembly			
159	QBN2038	Change Lever Spring	178	QMA4753	Operation Button Angle	N 51	XTV3 + 6B	Tapping Screw $\varnothing 3 \times 6$
160	QXL1694	Pinch Roller Arm Assembly	179	QMR2148	Obstruction Rod	N 52	XTN2 + 6B	Tapping Screw $\varnothing 2 \times 6$
160-1	QBN2047	Pinch Roller Arm Spring	180	QMR2147	Lock Rod	N 53	XTN26 + 6B	Tapping Screw $\varnothing 2.6 \times 6$
161	QBP2045	Return Spring	181	QMN2869	Operation Lever Shaft	N 54	XTV3 + 10BFN	Tapping Screw $\varnothing 3 \times 10$
162	QXU0355	Motor Assembly	182	QBP2018	Operation Lever Spring	N 55	XTV3 + 20BFN	Tapping Screw $\varnothing 3 \times 20$
163	QMF2335	Flywheel Holding Plate	183	QBS1145	Head Pressure Wire	N 56	XTV3 + 37B	Tapping Screw $\varnothing 3 \times 37$
164	QMZ1313	Thrust Retainer	184	QMN2883	Intermediate Gear Axis	N 57	QH01361	Screw $\varnothing 2 \times 12$
165	QXL1695	Record/Playback Arm Assembly	185	QBC1502	Erase Head Spring	N 58	XSN26 + 3	Screw $\varnothing 2.6 \times 3$
166	QBN2045	Record/Playback Spring				N 59	XSN2 + 3	Screw $\varnothing 2 \times 3$
						N 60	QBW2046	Poly Washer
						N 61	QBW2008	Poly Washer
						N 62	XUBQ3FT	Stop Ring 3 $\phi$
						N 63	XTN3 + 10B	Tapping Screw $\varnothing 3 \times 10$
						N 64	XWG3	Washer 3 $\phi$

# CABINET PARTS LOCATION







**Important safety notice**  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.

**Areas**

<ul style="list-style-type: none"><li>*[P] For U.S.A.</li><li>*[C] For Canada.</li></ul>
--



# Service Manual

Dolby B • C NR-Equipped  
Stereo Cassette Deck

Cassette Deck  
**RS-B14**



Color

(K)...Black Type

Color	Area
(S)	[P].....U.S.A.

## RS-B10 MECHANISM SERIES

- Please use this manual together with the service manual for model No. RS-B14 ([P] mark areas; "Silver Type") order No. HAD84052768C1.
- This Service Manual indicates the main differences between; original RS-B14 ([P] mark areas; "Silver Type") and RS-B14 ([P] mark areas; "Black Type").

## PARTS COMPARISON TABLE:

Please revise the original parts list in the Service Manual RS-B14 ([P] mark areas; "Silver Type") to conform to the changes shown herein.

If new part numbers are shown, be sure to use them when ordering parts.

Ref. No.	Part Name & Description	Part Numbers		Remarks
		"Silver Type"	"Black Type"	
1	Cassette Lid Assembly	QYF0723	<b>QYF0723K</b>	
2	Case Cover	QGC1251	<b>QGC1251K</b>	
4	Slide Guide	QGG0230H	<b>QGG0230K</b>	
11	Front Panel Assembly	QYP1273	<b>QYP1273K</b>	
15	Volume Knob Assembly-A	QYT0677	<b>QYT0672</b>	
16	Volume Knob Assembly-B	QYT0678	<b>QYT0673</b>	
N1	Ornament Screw	QHQ1349	<b>QHQ1349K</b>	
N2	Tapping Screw $\phi 3 \times 10$	XTB3 + 10BFN	<b>XTB3 + 10BFZ</b>	

Design and specifications are subject to change without notice.

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Printed in Japan  
84093200 (H) M.S